Idaho Currents

Northwest's First Geothermal Power Plant Set To Go Online In Idaho By 2007

By Michael Keckler, IDWR Public Information Officer

Four years ago, Doug Glaspey stood outside a locked gate in a remote corner of Idaho, and dreamed of producing power. Late last month, his dream became reality with a groundbreaking ceremony at that same remote place, near the Raft River south of Malta.

Glaspey is now chief operating officer for U.S. Geothermal Inc., which is building the Northwest's first geothermal powered electricity plant. The company plans to be turning out 10-megawatts by September 2007 (enough electricity to power approximately 5,000-homes), increasing to 36-megawatts within four years, and potentially 90-megawatts or better in the future.

Instead of the usual ribbon cutting ceremony, U.S. Geothermal let a burst of steam blast out of a pipe to signal the opening of the new geothermal power plant south of Malta. ***(Photo by Mike Keckler)***

"We crossed a mental threshold with our groundbreaking ceremony," said Daniel Kunz, U.S. Geothermal's President and CEO. "Everything from here out is a new beginning with great potential."

It started in 2002 when Glaspey was intrigued after reading a newspaper article about a geothermal energy conference sponsored by Idaho Senator Larry Craig. "I picked up a name from the article, Roy Mink with the Department of Energy. I called and asked him where in Idaho could the best geothermal resources be found? He said Raft River," which brings us back to the locked gate that Glaspey encountered when he first visited the site. Inside, $40 million worth of geothermal production infrastructure sat idle.

Thirty years earlier, the U.S. Department of Energy developed and operated a geothermal demonstration power project at the site. But in 1982 despite promising results, the DOE capped the deep wells, shut down the program, and sold the land to comply with federal budget cuts.

Recognizing opportunity to pick up where the feds left off, Glaspey and Kunz - business partners and former college classmates - tracked down the property's Oregon based owners, bought it, and formed U.S. Geothermal.

While the Raft River facility will keep them plenty busy, the company is already developing a list of other Idaho sites where geothermal resources could potentially be tapped to produce electricity. Indeed, geothermal water can

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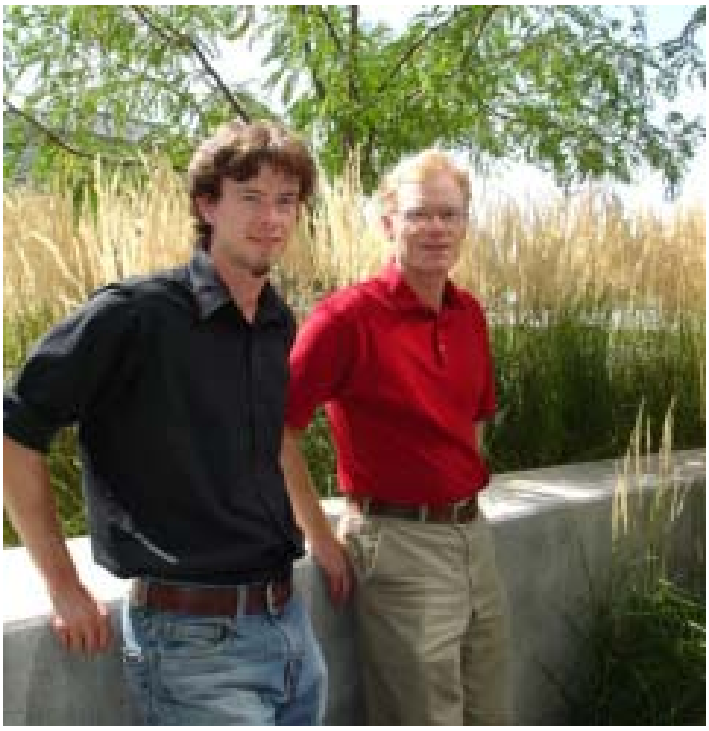
Summer Interns Get Practical Experience Working On Projects With Energy Staff



Collin Rudeen, left, engineering intern, and Gerald Fleischman, technical engineer, worked together this summer placing anemometers in several Idaho locations to study wind power feasibility. ***(Photo by Diane Stroup)***

Two interns with the Energy Division have been learning how to put their engineering education to use this summer at the Idaho Department of Water Resources. By working on existing energy projects, both people are conducting tests, gathering data, and assessing the results.

Collin Rudeen works with Gerald Fleischman, technical engineer, in renewable resources and Jason Hardy has been working Jeff Brooks, energy specialist, in the industrial efficiency field.

Collin Rudeen

Rudeen, from Olympia, WA, graduated in 2004 with a degree in Industrial Engineering from the University of Washington in Seattle. He then taught English in Japan for a year, and traveled for five months around Asia. Now he's ready to concentrate on engineering.

"I took this internship because I'm interested in renewable energy, especially wind power and this, I hoped, would be my foot in the door," says Rudeen. His internship has focused on two main job functions: erecting anemometer towers throughout the state to investigate utility scale wind power development, and conducting preliminary feasibility studies for small-scale wind projects designed for off-grid and net metering applications.

Previously chosen sites for the anemometers are selected according to their proximity to transmission lines, available wind resource and ownership. Four towers were set up this summer at four different locations to measure wind data at each site.

"Within a year or two, the Energy Division will have enough data from them to get an initial idea of the viability of wind projects at these sites," says Rudeen. "Of course as we cruise the Idaho highways to new anemometer locations, our eyes are always peeled for battered trees, scoured bushes and other telltale signs of strong winds."

Feasibility studies

With data from anemometers installed in previous years, Fleischman and Rudeen can get a pretty good estimate on how much energy various wind turbines would have produced had there been a turbine installed in the place of the anemometer.

"We have learned a lot from these studies and they have highlighted some of the difficulties, as well as benefits of net metering in the state of Idaho," says Rudeen.

As for future employment, Rudeen says he has "a tentative job offer from a renewable energy development group here in Boise, so it looks like I might be sticking around a little longer, and that this internship with IDWR was indeed the foot in the door I was looking for.

"I really enjoy travel and language. At some point, I would like to combine these interests with wind. I don't know what this would entail exactly. China is so hungry for energy, it would make sense to try and get involved with wind power there, but the Chinese language is pretty intimidating. Perhaps I will try to get involved somewhere in Latin America."

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Philippine Islands Use Geothermal Power To Produce 20% of Electrical Needs

The Philippine Islands are part of the "Ring of Fire," a band of earthquakes and volcanoes that rims the Pacific Ocean. Volcanoes have always been part of the Philippines' spectacular landscape.

Leyte is one of the 7,000 islands in central Philippines. It is a famous World War II historical site where Gen. Douglas McArthur first landed in October 1944 with his troops to retake the Philippines from Japanese occupation.

"The Philippines is now the world's second largest producer/user of geothermal electric power with 1,931 MW of installed capacity, trailing the United States," says Gerry Galinato, principal energy specialist with the Idaho Energy Division. Galinato recently visited some of the geothermal power generation sites, including the Leyte Geothermal Power Facilities near Ormoc, Leyte (667 MW) and the Mak-Ban Geothermal Facility near Mt. Makiling, Laguna (426 MW) in Luzon Island.

Pipelines carry the geothermal steam from production wells to power plants near Ormoc, Leyte. ***(Photo by Gerry Galinato***

Geothermal power, produced by nine operating plants, accounts for almost 20 percent of the country's total electric requirements. The power generated in the island of Leyte is distributed in three areas: a third remains in Leyte, a third is transmitted to Luzon and the remaining third is delivered to the Island of Cebu through submarine cables.

This binary cycle Geothermal Power Facility near Ormoc, Leyte, in the Philippines, produces 667 megawatts of power. ***(Photo by Gerry Galinato)***

Leyte, the site of one of the largest geothermal power generation plants in the world, sits on very hot bedrocks that heat groundwater that seeps through the faults. The geothermal water appears in the earth surface as hot springs or geysers, like the ones at the Yellowstone National Park. It can also be tapped by drilling deep wells.

A 1 MW plant generates about 7,884,000 kWh a year with 90 percent capacity factor; enough to supply the electric needs of 500 homes in Idaho. "Of course, it will be more houses in the Philippines since they use less electricity per household," says Galinato.

"I was amazed by how much the Philippines has progressed technologically in this field," he adds. Although Idaho doesn't have any geothermal power generation plant at present, the Raft River geothermal power generation project is currently being developed. U.S Geothermal, Inc., the project developer, anticipates that a 10 MW project will be online by the end of 2007 (see geothermal article on page 1).

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Jason Hardy lives in Boise and graduated from Boise High School in 2003. He is in his final year at the University of California, Santa Barbara where he's majoring in mechanical engineering. He plans to graduate in the spring of 2007.

As part of the internship, Hardy has been helping Brooks conduct industrial pump system assessments in conjunction with the Simplot Company and the Amalgamated Sugar Company.

Each assessment involves taking detailed measurements at the plants – a process that takes several days. The team then analyzes the data and compiles a detailed report. Hardy's writing skills are valuable in this phase of the assessment.

"Pump systems are one of the biggest energy users in industrial facilities," says Hardy. "Many pumps are over sized due to the inclusion of unnecessary safety factors during their initial sizing and installation. Pump systems also waste energy through throttling valves and bypass lines that are used to control these oversized pumps."

Pump assessments

The assessments seek to identify potential energy savings in industrial pump systems and to quantify these savings and to evaluate replacement options. Hardy and Brooks have traveled to Simplot plants around Idaho and the country performing assessments and recommending energy saving alternatives.

Collin Rudeen, summer intern with the Energy Division, stands next to a newly erected anemometer in Deep Creek Ridge near Dubois. The anemometer, on state land, was financed by a grant to investigate wind development in Clark County. ***(Photo by Gerald Fleischman)***

Hardy says he's interested in aerospace and aeronautical engineering and design. After graduation from UCSB he plans to attend graduate school and pursue a degree in aerospace engineering.

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Amid the tropical forests on Mt. Makiling near Laguna, geothermal pipelines carry steam from a well down to the power plant. ***(Photo by Gerry Galinato)***

be found throughout much of Idaho, but tapping it for electricity production can be a risky venture.

"We think the potential is there but it can be a potentially risky and expensive venture," said Ken Neely, a 16-year hydrogeologist with the IDWR. "More technical studies, including exploration wells are needed to know how hot the water is and how much is actually available throughout the state."

At U.S. Geothermal, growing markets for green energy (clean and renewable) offset the risks. The company has a 20-year contract to sell power from its first plant to Idaho Power Company – perhaps the first of many such contracts utilizing a fairly common Idaho resource that in Kunz's words literally wells up from deep inside the earth.

Idaho Currents, a bi-monthly newsletter featuring articles on energy and water issues, is brought to you by the Idaho Department of Water Resources, 322 E. Front St., Boise, ID 83702, and is supported by the U.S. Department of Energy. Funding from DOE is through the Congressionally-approved State Energy Program. Linda Cawley, Editor; Diane Stroup, Graphic Specialist; Karl Dreher, Director; James E. Risch, Governor. Electronic subscriptions are free by contacting the editor at linda.cawley@idwr.idaho.gov or by calling the Idaho Energy Hotline, 1-800-334-SAVE.